

Applicant : Michael Perani and Yong Joo Kil
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REMARKS

Claims 1-24 are pending. Claims 1-5, 7-8, 12 and 14-24 are rejected under 35 U.S.C. § 102(a & b) as being anticipated by Adobe "Adobe Illustrator 8.0 Classroom in a Book", Adobe Systems Incorporated, 1998 ("Adobe").

Claims 6 and 10-11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Adobe as applied to claim 1, and further in view of Mordy Golding "Sams Teach Yourself Adobe Illustrator 9 in 24 Hours", Sams, 2000 ("Golding").

Claims 9 and 13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Adobe as applied to claim 1, and further in view of Paul Borrel and Ari Rappaport "Simple Constrained Deformations for Geometric Modeling and Interactive Design", ACM, 1994 ("Borrel").

The drawings are objected to as failing to comply with 37 C.F.R. § 184(p)(4) because reference characters "225" and "230" have both been used to designate the step of exporting distorted art. The applicant respectfully traverses the rejections for the reasons set forth below.

I. The objections to the drawings

The Examiner objected to the drawings as failing to comply with 37 C.F.R. § 184(p)(4) because reference characters "225" and "230" have both been used to designate the step of exporting distorted art. The applicant has amended box 225 of FIG. 2 to read "Export intermediary distorted art," and amended box 230 of FIG. 2 to read "Export final distorted art," in order to distinguish between the art that is exported during a "mouse drag" operation and the art that is exported during a "mouse up" operation. Corresponding amendments have been made to the specification on pages 9 and 10, respectively. A replacement drawing sheet with the new figure 2 is attached to the end of this response. The applicant submits that the drawings are now in compliance with 37 C.F.R. § 184(p)(4).

II. The § 102 Rejections

The Examiner rejected claims 1-5, 7-8, 12 and 14-24 under 35 U.S.C. § 102(a & b) as being anticipated by Adobe "Adobe Illustrator 8.0 Classroom in a Book", Adobe Systems

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Incorporated, 1998 ("Adobe"). The applicant respectfully traverses the rejection for at least the following reasons.

Claim 1, as amended, is directed to a computer program product for performing computer graphics operations on an image represented by digital data and recites the limitation "provide an editing brush for interactive editing of the image by a user, the editing brush having a size and shape defining a region of influence, the editing brush being operable to apply a displacement function to control points in the region of influence, whereby when the editing brush is applied by the user to the image, a local distortion of a part of the image that overlaps with the region of influence is generated"

The Examiner contends that Adobe, page 130, shows an editing brush for interactive editing of the image by a user. Adobe, page 130, shows a paintbrush tool that may be used to edit paths, such that if a path is selected and the paintbrush tool is moved along a portion of the selected path, a new path is added to the selected path. This produces the appearance of editing the selected path. While a paintbrush tool of this type may, in some sense, be considered an editing brush, the applicant respectfully disagrees with the Examiner's conclusion that this shows an editing brush as recited in claim 1. For example, the paintbrush tool in Adobe is not operable to apply a displacement function to control points in a region of influence, and it does not generate a local distortion of a part of the image that overlaps with a region of influence when it is applied by the user to the image, all of which is required by claim 1.

The Examiner then refers to a second, separate feature disclosed in Adobe, the "scatter brush," and states that the figures on page 136 of Adobe shows an editing brush having a region of influence. The scatter brush shown on page 136 of Adobe "scatters an object, such as a leaf, a ladybug, or a strawberry, along a path" (Adobe, page 134) and is independent from, and cannot be used in the same manner as, the paintbrush described above. Thus the scatter brush may be considered to have a region of influence in the sense that it is possible to modify a scatter options parameter that indicates a deviation of objects from the scatter brush's path. However, this is a property that is unique to the scatter brush and cannot be selected for the paintbrush (i.e. the "editing brush") discussed above. Furthermore, even if the scatter brush were considered to have region of influence, the scatter brush in Adobe is not operable to apply a displacement function to control points in the region of influence, and it does not generate a local distortion of a part of

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the image that overlaps with the region of influence when it is applied by the user to the image, all of which is required by claim 1.

The Examiner then refers to a third, separate feature disclosed in Adobe, a "Zig Zag distort filter," and states that the figures on page 168 of Adobe show an editing brush that is operable to apply a displacement function to control points in the region of influence. The figures on page 168 of Adobe do not show any editing brush at all. Instead these figures show how the Zig Zag distort filter can be applied to a straight line in order to create a wavy line effect or a jagged line effect. Applying a filter is a completely different operation from applying a user manipulated editing brush: as described in the background section of the pending application, "When using filters to modify the curves of objects, the filter input variables are under user control, but the user generally does not control the area of their application. That is, the filtering operation is applied uniformly over the entire curve definition of the object." (The applicant's specification, page 2, lines 13-15). This can clearly be seen in the figures on page 168 of Adobe, where the filter effect is applied to the entire line. Thus, the Zig Zag distort filter is not applied in the same manner as an editing brush in accordance with the invention; it does not have a size and shape defining region of influence, but is instead uniformly applied to an entire object; it is not operable to apply a displacement function to control points in the region of influence; and it does not generate a local distortion of a part of the image that overlaps with the region of influence when it is applied by the user to the image; all of which is required by claim 1.

Finally, for claim 1, the Examiner refers to a fourth, separate feature disclosed in Adobe, a "twirl tool," and states that the figure on page 169 of Adobe shows that when the tool is applied by the user to the image, a local distortion of the image is generated. For reasons of clarity, the applicant has changed this part of claim 1 to read "when the editing brush is applied by the user to the image, a local distortion of a part of the image that overlaps with the region of influence is generated." This further defines that the local distortion is limited to the part of the image that overlaps with the region of influence of the editing brush, as defined by its size and shape. The twirl tool shown in the figure on page 169 of Adobe is separate from the paint and scatter brushes discussed above. This twirl tool does not have a region of influence, it is not operable to apply a displacement function to control points in the region of influence, and it does not generate a local distortion of a part of the image that overlaps with the region of influence when

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it is applied by the user to the image (instead, it is similar to a filter in that it affects the entire object), all of which is required by claim 1.

Thus, none of the four individual features of Adobe that were discussed above teaches a computer program product as recited in claim 1. It should also be clear that each of these four features is a separate feature that cannot be combined with any of the other features to result in a computer program product as recited in claim 1. Claim 1 is therefore allowable for at least the reasons discussed above.

Claims 2-5, 7-8, 12, and 14-24 all depend from claim 1 and should be allowable for at least the reasons set forth with respect to claim 1. In addition, claim 14 is allowable for at least the following reasons.

Claim 14 recites that a trajectory of the editing brush can be used to determine a rotational orientation of the vector field around an axis perpendicular to an image plane. The cited passage (page 134) of Adobe shows a rotation option for specifying how the objects applied by the scattering brush are to be rotated relative to the path of the scattering brush. This is a set rotation with respect to the path, and does not describe how a trajectory of an editing brush is used to determine a rotation of a vector field. Claim 14 should therefore be allowable for at least this additional reason.

III. The § 103 Rejections

The Examiner rejected claims 6 and 10-11 under 35 U.S.C. § 103(a) as being unpatentable over Adobe as applied to claim 1, and further in view of Mordy Golding "Sams Teach Yourself Adobe Illustrator 9 in 24 Hours", Sams, 2000 ("Golding"). The Examiner also rejected claims 9 and 13 under 35 U.S.C. § 103(a) as being unpatentable over Adobe as applied to claim 1, and further in view of Paul Borrel and Ari Rappaport "Simple Constrained Deformations for Geometric Modeling and Interactive Design", ACM, 1994 ("Borrel"). The applicant respectfully traverses these rejections for at least the following reasons.

Claims 6, 9, 10-11 and 13 all depend from claim 1. It should be clear from the discussion above that claim 1 is both novel and non-obvious in view of Adobe. Neither Golding nor Borrel, which the Examiner cites for their alleged disclosure of removing control point triplets, ensuring satisfaction of continuity constraints for anchor points, a falloff to zero influence over the region

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of influence, and a vector field of displacements over the region of influence, respectively, shows or suggests a computer program product as recited in claim 1. Combining Golding or Borrel with Adobe does therefore not make claim 1 any more obvious than it would be in view of Adobe alone. Since claims 6, 9, 10-11 and 13 all depend from claim 1, they should therefore be allowable at least for the reasons presented above with respect to claim 1.

IV. Remarks regarding further amendments

For reasons of consistency the specification has been changed on page 4 and page 9 to recite a "region of influence" rather than a "radius of influence."

A dependent claim 25 reciting instructions to "apply the editing brush to the image to generate a local distortion of a part of the image that overlaps with the region of influence" has been added.

A dependent claim 26 reciting instructions to "apply a displacement function to control points in the region of influence" has been added.

A set of method claims 27-52 corresponding to the computer program product claims has been added.